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QUESTIONS
AND
ANSWERS
BY
W. DOUGLAS HEMMING, M.R.C.S.

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QUESTIONS

AND

ANSWERS

ON

MATERIA MEDICA, MEDICINE, MIDWIFERY,
PATHOLOGY, AND FORENSIC MEDICINE,

FOR THE USE OF STUDENTS PREPARING FOR EXAMINATION.

BY

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LONDON:
BAILLIERE, TINDALL & COX, KING WILLIAM ST., STRAND.
DUBLIN: FANNIN & CO.
EDINBURGH: MACLACHLAN & STEWART.
GLASGOW: A. & W. STENHOUSE.

1877.

LONDON:

REPRINTED FROM THE STUDENTS' JOURNAL, BY
BAILLIERE, TINDALL, & COX.

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PREFACE.

In compiling the following pages, my object has been to present to the Student examples of the Questions put by the different examining boards, and the correct Answers to them, according to the best treatises and text-books on the various subjects. There are many students, who, while they possess ample knowledge, find great difficulty in transferring that knowledge clearly and succinctly to paper, and it is to them especially that this little work will be of use. I would say that it is in no sense whatever as intending to supplant or take the place of the larger text-books, a knowledge of which is essential to all who wish to pass Medical or Surgical Examinations, that I produce this unpretending volume, but merely as an aid to the Student in making the best use of that knowledge.

Should it be well received, and appear to have fulfilled any useful purpose, I shall hope at a future time to issue a similar series on other subjects, as Anatomy, Physiology, Surgery, &c.

In conclusion, I must disclaim any pretensions to originality, the Answers being, in many instances, copied almost verbatim from standard books.

W. DOUGLAS HEMMING.

26, Notting Hill Terrace, W.

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QUESTIONS AND ANSWERS.

MATERIA MEDICA AND THERAPEUTICS.

1. *Q.*—Describe the preparation and medicinal properties of cupri sulphas, bismuthi oxidum, and linimentum crotonis. (Qu. Univ. Ireland, 1875.)

A.—*Cupri sulphas* is obtained by heating sulphuric acid and copper together, dissolving the soluble product in hot water, and evaporating till crystals form on cooling. Sulphate of copper given internally in small doses is astringent to the alimentary canal, and also after being absorbed acts as a tonic on the nervous system. It is a reliable and speedy emetic in larger doses. Externally it is escharotic, and when diluted stimulant and astringent.

Bismuthi oxidum is obtained by boiling nitrate of bismuth with excess of solution of soda, decanting and washing the precipitated oxide. In large doses it is said to be poisonous, but the fatal effects are usually owing to the presence of arsenic. It is useful as a gastric sedative and astringent. It has also been used in epilepsy. Externally it has been used in some skin affections.

Linimentum crotonis is prepared by mixing croton oil, one fluid ounce; oil of cajuput and rectified spirit, of each three and a half fluid ounces. The croton oil liniment is a strong counter-irritant, giving rise to an eruption on the skin when applied externally.

2. *Q.*—Describe the preparation, properties, and doses of ferrum redactum and ferrum tartaratum. (A. H. L., 1875).

A.—*Ferrum redactum* is made by heating hydrated peroxide of iron in a gun-barrel in a furnace, and passing through it hydrogen gas. It is an impalpable powder, soluble in dilute hydrochloric acid. Therapeutically it is useful when the blood-restoring properties of iron are required without any astringent action. It acts powerfully as a blood restorer even in small doses. The dose is from gr. 2 to gr. 6.

Ferrum tartaratum is prepared as follows: — Hydrated peroxide of iron, precipitated from solution of persulphate by ammonia, is digested with acid tartrate of potash for six hours at a temperature of below 140°. After cooling, and the removal of undissolved precipitate, the fluid is evaporated to dryness at a temperature not exceeding 140°. *Ferrum tartaratum* appears in the form of thin garnet coloured scales, sparingly soluble in spirit, soluble in water. It gives a blue precipitate with ferrocyanide of potassium, after being acidulated with hydrochloric acid, but no precipitate with ferridcyanide. Therapeutically, besides having hæmitic powers, it probably acts on the blood and urine similarly to the simple alkaline tartrates. The dose is from gr. 5 to gr. 20.

3. *Q.*—Whence is Rhubarb obtained? Describe the preparations in the B. P. and their uses. (A. H. L., 1875).

A.—Rhei radix, or rhubarb root, is the dried root, deprived of the bark, from one or more undetermined species of Rheum. It grows in Chinese Tartary and Thibet. There are several varieties: known as, Turkey, East Indian, Dutch-trimmed, Himalayan, and English Rhubarb. The preparations in the British Pharmacopœia are: Extractum rhei, infusum rhei, pilula rhei composita, pulvis rhei compositus (Gregory's powder), syrupus rhei, tinctura rhei, and vinum rhei. The extractum is prepared with water and rectified spirit, and evaporated at a temperature not exceeding 160°. The infusum rhei is prepared with boiling distilled water. The Pil. Rhei Co. contains, rhubarb, three ounces; socotrine aloes, two ounces and a quarter; myrrh, one ounce and a half; treacle, four ounces; and oil of peppermint, one drachm and a half. The Pulv, Rhei Co. contains, rhubarb, two ounces; light magnesia six ounces; ginger, one ounce. Syrupus Rhei. contains, rhubarb-root and coriander fruit, of each two ounces; refined sugar, twenty four ounces; rectified spirit, eight ounces; water, twenty-four ounces. Tinct. Rhei contains, rhubarb, two ounces; cardamoms, quarter of an ounce; coriander, quarter of an ounce; saffron, quarter of an ounce; proof spirit, twenty ounces. Vinum Rhei contains, rhubarb one ounce and a half; canella alba bark, sixty grains; sherry, a pint. Therapeutically, rhubarb is a stomachic and slight astringent in small doses; a purgative in larger ones. It is frequently used at the beginning of diarrhœa, to expel irritant matters from the alimentary canal. It is very valuable in dyspepsia, where constipation is present. It has been used externally to indolent ulcers.

4. *Q.*—State the relative value of the drugs, and their doses, which act as depressants of the circulation. (A. H. L. 1874).

A. The depressants of the circulation or vascular sedatives are those drugs which possess the power of depressing the action of the heart or other portions of the circulatory system. Those acting especially on the heart are digitalis, green hellebore, tobacco, aconite, colchicum and hydrocyanic acid; those acting on the smaller vessels and capillary system are antimony, nitrate of potash, acetate of lead, ipecacuauha, and ergot. Aconite, hellebore and colchicum act as direct cardiac sedatives, while digitalis seems to quiet the organ by producing more regularity in its movements by stimulating it through its nerves. Antimony depresses the heart's action through the general circulating system. Hydrocyanic acid acts on the vascular system only in an indirect manner. Ipecacuanha in large doses acts powerfully as a controller of the circulation. The doses of the above remedies are as follows: digitalis (tinctura) min. 10 to min. 30 and upwards. Green hellebore (tinct. veratri viridis) min. 5 to min. 20. Tobacco (enema tabaci) about eight ounces should be used at a time; it contains 20 grains of tobacco. Aconite (tinctura) min. 5 to min. 15. Colchicum (extractum aceticum) gr. ½ to gr. 2. Hydrocyanic acid (dilute) min. 2 to min. 8. Antimony (tartarated) gr. ⅙ to gr. 2. (Oxide) gr. 1 to gr. 5. Nitrate of potash, gr. 20 to gr. 30. Acetate of lead, gr. ½ to gr. 3 or more. Ipecacuanha (vinum) drm. 3 to drm. 6 as an emetic. Ergot, min. 10 to min. 30 and upwards.

5. *Q.*—What is the action and what are the preparations of the drugs, belladonna and hyoscyamus?
(A. H. L., 1875).

A. Belladonna given internally causes dryness of the throat, thirst and difficulty of deglutition; in large doses delirium and dilatation of the pupil follow. It acts as a stimulant to the vascular system, allays pain in neuralgic affections, gastrodynia and spasms of the sphincters. The preparations are; of belladonna leaves, extractum, emplastrum, tinctura and unguentum; of the root, linimentum belladonnæ; of atropia, the alkaloid derived from the root, liquor atropiæ, unguentum atropiæ, atropiæ sulphas and liquor atropiæ sulphatis.

Hyoscyamus is narcotic and slightly irritant. In large doses it causes delirium, dilatation of pupil, loss of vision and profound stupor. It is also useful as an anodyne and hypnotic, and in some cases is preferable to opium. The preparations are succus hyoscyami, tinctura hyoscyami, and extractum hyoscyami.

6. *Q.*—Whence is cinchona obtained? What varieties are there? Name their chief chemical constituents and preparations. (A. H. L., 1875).

A.—Cinchona is obtained from the bark of three different kinds of cinchona tree, all of which inhabit the Andes. The varieties are, the yellow cinchona bark from the cinchona calisaya, collected in Bolivia and Southern Peru; the pale cinchona bark from the cinchona condaminea collected in Ecuador; and the red cinchona bark from cinchona succiruba, collected on the western slopes of Chimborazo.

The chief constituents of cinchona are acids and alkaloids. They are as follows:—Quinic acid, quinotannic acid, quinovine, quinovic acid, quinine, cinchonine, quinidine, and cinchonidine. The officinal preparations of cinchona bark are:—

1. *Of the yellow bark.*—Decoctum cinchonæ flavæ, extractum cinchonæ flavæ liquidum, infusum cinchonæ flavæ, and tinctura cinchonæ flavæ.

2. *Of the pale bark.*—Tinctura cinchonæ compositæ.

3. *Of Quinia.*—Pilula quiniæ, tinctura quiniæ, vinum quiniæ, tinct quiniæ ammoniata, ferri et quiniæ citras.

7. *Q.*—Enumerate the astringent drugs of the pharmacopœia, and give their doses. (A.. H. L., 1875).

A.—The astringent drugs contained in the pharmacopœia are the following :—Acetum (dose 1 drm. to 2 drm. diluted), acidum carbolicum (1 gr. to 3 gr.), acidum gallicum (2 gr. to 10 gr. or more), acidum sulphuricum dilutum (5 min. to 30 min.), acidum tannicum (2 gr. to 10 gr. or more), alumen (10 gr. to 20 gr.), extractum belæ liquidum (1 drm. to 2 drm.), bismuthi subnitras (5 gr. to 20 gr.), borax (5 gr. to 40 gr.), catechu (10 gr. to 30 gr.), creasotum (1 min. to 3 min.), calcis carbonas præcipitata (10 gr. to 60 gr.), cupri sulphas ($\frac{1}{4}$ gr. to 2 gr.), ergotæ (20 gr. to 30 gr.), ferri sulphas (1 gr. to 5 gr.), tinct ferri perchloridi (10 min. to 30 min.), liquor ferri pernitratis (30 min. to 1 drm.), tinctura gallæ ($\frac{1}{2}$ drm. to 2 drm.), decoctum hæmatoxyli (1 oz. to 2 oz.), extractum hæmatoxyli (10 gr. to 30 gr.), kino (10 gr. to 30 gr.), krameria (20 gr. to 60 gr.), matico (30 gr. to 60 gr.), plumbi acetas (1 gr. to 4 gr.), plumbi carbonas (used externally), decoctum quercùs (1 oz. to 4 oz.), infusum rosæ acidum (1 oz. to 2 oz.), uva ursi (10 gr. to 30 gr.), zinci acetas (1 gr. to 2 gr.), zinci carbonas (1 gr. to 5 gr. or more), zinci oxidum (2 gr. to 10 gr.), zinci sulphas (1 gr. to 3 gr.)

8. *Q.*—How is bromide of potassium prepared, and what are its therapeutic uses ? (A. H. L., 1875).

A. Bromide of potassium is prepared by adding bromine to liq. potassæ, until the mixture has acquired a brown tint. After evaporating to dryness, heat the residue with charcoal, dissolve out the bromide, filter the solution and allow it to crystallise.

Bromide of potassium is employed therapeutically as an alterative in many cases where patients cannot take iodide of potassium, to cause removal of glandular swellings and enlarged spleen. It is also extensively used in diseases of the nervous system as chorea, epilepsy, hysteria, whooping cough, laryngismus stridulus, and spasmodic asthma. It acts as a soporific in many forms of sleeplessness when opium cannot be borne. It is also valuable in affections of the generative organs, and in menorrhagia. In some forms of convulsions in children, especially those accompanying or following meningitis, it is often of service.

9. *Q.*—Copper and its salts. What are their medicinal, pharmaceutical, and forensic uses?
(R. C. P. L., 1875).

A.—The salt of copper, which is used medicinally, is the sulphate, which is an astringent to the alimentary canal in small doses; in larger ones it is a quick and powerful emetic. Externally, in powder or strong solution, it is escharotic, or if more diluted, stimulant and astringent. Pharmaceutically, copper is used in the preparation of the sulphate; and, as a deoxidising agent, in preparing spiritus ætheris nitrosi. The ammonio-sulphate of copper is also used as a test for the presence of sulphides in liquor ammoniæ fortior. Forensically, copper is used in testing for arsenic by Reinsch's process, and also as a test for arsenious acid, with which the ammonio-sulphate forms a green precipitate of arsenite of copper.

10. *Q.*—Mention the medicines contained in the pharmacopœia which are used as diuretics, and state the doses which you would give. Write two prescriptions in full for diuretic mixtures. (R. C. S. E., 1875).

A.—The diuretics contained in the pharmacopœia are:—Digitalis (dose of tinctura, min. 10 to min 30); scilla (gr. 1 to gr. 3); decoctum scoparii (oz. 2 to oz. 4): sp. ætheris nitrosi (min. 30 to drm. 2); buchu (gr. 20 to gr. 40); cambogia (gr. 1 to gr. 4); tinct. cantharidis (min 5 to min 20); oleum juniperi (min. 1 to min. 10); pareira (gr. 30 to gr. 60); potass. acetas (gr. 1 to gr. 20); potassæ nitras (gr. 10 to gr. 30); potass. tartras acida (gr. 20 to gr. 60); oleum terebinth (min. 10 to min. 20); ammon. benzoas (gr. 10 to gr. 20); ammon. chlor (gr. 5 to gr. 20); sp. armoraciæ co (drm. 1 to drm. 2); borax (gr. 5 to gr. 40); extract. colchici (gr. ½ to gr. 2); cubebæ oleum (min. 5 to min. 20); copaibæ (drm. ½ to drm. 1); syrupu hemidesmi (drm. 1); lithiæ carb. (gr. 3 to gr. 6); pareiræ decoct. (oz. 1 to oz. 2); senegæ infusum (oz. 1 to oz. 2); liq. sodæ effervescens (oz. 5 to oz. 10; decoctum taraxaci (oz. 2 to oz. 4). Prescriptions—(1). R. Potass. acetatis, gr. 120; syrupi scillæ, drms. 6; spirit ætheris nitrosi, drms. 3; tincturæ digitalis, min. 30; succi scoparii, drms. 6; aquæ ad, oz. 8; M. One-sixth part to be taken every six or eight hours. (2). R. Spiritus juniperi, drms. 2; potassæ tartratiss acidæ, oz. 1; decocti scoparii ad oz. 12; M. One-sixth part three times a day.

11. *Q.*—How do you prepare the green iodide of mercury, the red iodide, and the red oxide?

(F. P. S., Glasgow, 1876.)

A.—The green iodide (Hydrargyri iodidum viride) is prepared thus:—One ounce of mercury and 278 grains of iodine are rubbed together, rectified spirit being gradually added until the globules of mercury are no longer visible, and the whole assumes a green colour. The powder must then be dried in a dark room, on filtering paper, and kept in a black, stoppered, vessel.

The red iodide of mercury (Hydrargyri iodidum rubrum) is prepared by dissolving four ounces of corrosive sublimate and five ounces of iodide of potassium, and then mixing the solutions. A simple double decomposition takes place, chloride of potassium and iodide of mercury being formed: the latter is precipitated and separated by decantation and filtration.

The red oxide of mercury (Hydrargyri oxidum rubrum) is prepared from mercury, eight ounces; nitric acid, four-and-a-half fluid ounces; distilled water, two fluid ounces. Dissolve half the mercury in the nitric acid diluted with the water, evaporate the solution to dryness, and triturate the dry salt with the rest of the mercury. Heat the mixture in a porcelain capsule until acid vapour ceases to rise.

12. *Q.*—Name the officinal preparations of arsenic. Give the range of dose in each, and state in what condition of the stomach, as to food, every preparation of arsenic should be exhibited. Give the symptoms that indicate the full physiological action of it on the system. How does arsenic prove fatal?

(Univ. Aberd. 1875.)

A.—The officinal preparations of arsenic are:—Acidum arseniosum (dose, $\frac{1}{60}$ gr. to $\frac{1}{12}$ gr.); liquor arsenicalis (2 min. to 8 min.); liquor arsenici hydrochloricus (2 min. to 8 min.); sodæ arsenias ($\frac{1}{16}$ gr. to $\frac{1}{8}$ gr.); liquor sodæ arseniatis (5 min. to 10 min.); ferri arsenias ($\frac{1}{16}$ gr. to $\frac{1}{2}$ gr.)

Preparations of arsenic should be given soon after a meal, when the stomach is full.

The symptoms indicating that the system is under the physiological action of the drug are increased pulse, tenderness of the eyes, puffiness of the eyelids, whiteness of the tongue, heat and dull pain along the alimentary canal: when these occur its use must be intermitted.

In poisoning by arsenic, death occurs by coma, but this may be preceded by pain, tenderness, vomiting, purging, and cramps from irritation of the alimentary canal; by redness and smarting of the conjunctiva, intense thirst, palpitation and rapid pulse from its absorption into the blood; by headache, delirium, convulsions, tetanic spasms, epileptic fits, extreme weakness and paralysis, owing to its circulation through the nervous sysyem; and lastly by jaundice, dysuria, suppression of urine and uræmia by elimination through the liver, kidneys, and skin.

13. *Q.*—Give the ingredients of decoctum sarsæ co., decoctum aloes co., mist ferri co. Describe the method of preparing the last-named mixture.

(A. H. L., 1875).

A.—Decoctum sarsæ co. is made from Jamaica sarsaparilla 2½ oz., sassafras chips ¼ oz., guaiac wood turnings ¼ oz., fresh liquorice root ¼ oz., mezereon 60 grs., boiling distilled water 1½ pint.

Decoctum aloes co. is made from extract of socotrine aloes 120 grs., myrrh, saffron, of each, 90 grs., carbonate of potash 60 grs., ext. liquorice 1 oz., compound tincture of cardamoms 8 oz., distilled water up to 30 oz.

Mistura ferri co. is prepared thus:—Triturate 60 grs. of powdered myrrh, and 30 grs. of carbonate of potash, with 60 grs. of refined sugar, and 4 drms. of spirit of nutmeg, gradually adding 7 oz. of rose water until a uniform mixture is obtained. To this add 25 grs. of sulphate of iron, dissolved in 2½ oz. of rose water, and enclose the mixture at once in a tightly corked bottle.

14. *Q.*—Give the formula for chloroform, and give its mode of preparation, characters, and tests.

(A. H. L., 1875).

A.—Chloroform, $CHCl_3$, is prepared from chlorinated lime 10 lbs., rectified spirit 30 oz., water 3 galls., chloride of calcium in fragments 2 oz., slaked lime a sufficiency, sulphuric acid a sufficiency, distilled water 9 oz. The rectified spirit and water are distilled with a mixture of slaked and chlorinated lime; the distillate well agitated with water, and the lower stratum of crude chloroform separated, repeatedly washed with successive portions of water, and well shaken with its own volume of sulphuric acid; the layer of chloroform is again separated, mixed with chloride of calcium and slaked lime, and purified by redistillation.

Chloroform thus obtained is a colourless, heavy liquid, with an agreeable fruity odour and sweet taste. It mixes with ether and alcohol in all proportions. It dissolves slightly in water, is neutral in reaction, and when rubbed on the skin quickly evaporates, leaving no odour if pure. It burns, not readily, with a green and smoky flame. It is not coloured by agitation with sulphuric acid, and evolves no gas when potassium is dropped into it. Sp. gr. 1·49.

15. *Q.*—Give the preparations of bismuth, the doses of each, and explain the preparation of the liquor. (A. H. L., 1875.)

A.—The preparations of bismuth in the pharmacopœia are bismuthi subnitras (5 gr. to 20 gr.); trochisci bismuthi; liquor bismuthi et ammoniæ citratis (½ drm. to 1½ drm.); bismuthi carbonas (5 gr. to 20 gr.); bismuthi oxidum (5 gr. to 15 gr.). The liquor bismuthi et ammoniæ citratis is prepared from purified bismuth 430 grs.; nitric acid, 2 oz.; citric acid, 2 oz.; solution of ammonia and distilled water, of each a sufficiency. Mix the nitric acid with an ounce of distilled water, and add the bismuth in successive portions. When effervescence has ceased, apply for ten minutes a heat approaching that of ebullition, and decant the solution from any insoluble matter. Evaporate the solution down to two fluid ounces, then add the citric acid previously dissolved in four ounces of distilled water, and afterwards the solution of ammonia, in small quantities at a time, until the precipitate formed is redissolved, and the solution neutral or slightly alkaline to test paper. Dilute with distilled water to one pint.

16. *Q.*—Describe the effects of overdoses of (a) bromide of potassium, (b) iodide of potassium (c) cinchona bark, or sulphate of quinia. (Univ. Aberd., 1875.)

A.—(a) Overdoses of bromide of potassium appear sometimes to impair the nutrition of the brain, and produce a semi-idiotic state; and also may have an antaphrodisiac effect, causing loss of virile power. If as is frequently the case, the bromide is adulterated with iodide of potassium, it will have the effects of the latter drug. (b) Iodide of potassium when given to excess, causes irritation of the mucous membrane of the nose, frontal sinus, eyes, pharynx, &c., giving rise to catarrh and coryza. Much depression and a low febrile state of the system, with disturbed digestion, headache, articular pains, and nervous irritability may ensue. (c) Overdoses of cinchona bark or of sulphate of quinine, occasion headache, giddiness, nausea, pain in the stomach, flushed countenance, ringing in the ears, and, more rarely, numbness of the feet, blindness, deafness, and delirium.

17. *Q.*—Give the therapeutic action of aloes, gamboge, and rhubarb, and the doses of each. (A. H. L., 1876).

A.—Aloes acts as a purgative; chiefly affecting the lower portions of the intestinal tube. It excites the peristaltic action of the bowels. It is much used in constipation with deficiency of bile, and in chronic dyspepsia. In combination with iron and myrrh, aloes is given in amenorrhœa. The dose of aloes in powder is from gr. 2 to gr. 6. Of the extract of aloes gr. 2 to gr. 6, of compound decoction of aloes 1 oz. to 2 oz.

Gamboge acts as a drastic and hydragogue purgative. It often causes griping and vomiting, and should, therefore, when employed be combined with some other cathartic, as scammony or jalap. Also useful as an anthelmintic. The dose of gamboge powder is gr. 1 to gr. 5; of the compound gamboge pill, which contains gamboge, aloes, cinnamon, soap, and syrup, gr. 5 to gr. 15.

Rhubarb acts as a stomachic, and slight astringent in small doses. In larger ones it is purgative. After its purgative action it generally causes constipation, its astringent qualities then coming into play. It is very often used at the commencement of diarrhœa, depending on the presence of irritant matter in the canal. It is frequently given in combination with magnesia, or with bicarbonate of soda. The dose of powdered rhubarb is, as a stomachic, gr. 1 to gr. 5; as a purgative, gr. 10 to gr. 30; of the extractum rhei, gr. 5 to gr. 15; of infusum, 1 oz. to 2 oz.; of the syrup, 1 drm. to 4 drms.; of tincture, as a stomachic, 1 drm. to 2 drms.; as a purgative, ½ oz. to 1 oz.; of the compound powder, gr. 5 to gr. 10 for children; for adults, gr. 20 to gr. 60.

18. *Q.*—What salts and preparations of zinc are there contained in the B. P.? Give the doses of those given internally. (A. H. L., 1876).

A.—The salts and preparations of zinc contained in the pharmacopœia are—Granulated zinc; sulphate of zinc, from which red lotion is prepared; carbonate of zinc; oxide of zinc, from which zinc ointment is made;

acetate of zinc; chloride of zinc, from which liquor zinc chloridi is made; and valerianate of zinc. The doses for internal administration are—of oxide, gr. 1 to gr. 10, in pill or powder; of chloridi, gr. ½ to gr. 2; of sulphate, as a tonic or astringent, gr. 1 to gr. 5 or gr. 10; as an emetic, gr. 10 to gr. 30; of carbonate, gr. 1 to gr. 10; of acetate, as a tonic, gr. 1 to gr. 2; as an emetic, gr. 10 to gr. 20; of valerianate, gr. 1 to gr. 3.

19. *Q.*—State the officinal parts of hemlock, and the preparations derived from them.
(Univ. Edin., 1876.)

A.—Both the leaves and the fruit of hemlock (conium maculatum) are officinal. From the fresh leaves and young branches are prepared the cataplasma conii, extractum conii, pilula conii composita, vapor coniæ, and succus conii; from the ripe dried fruit is prepared the tinctura conii.

20. *Q.*—Describe the action of foxglove on the circulation (heart and blood vessels), and the various therapeutic effects which are founded on those actions.
(Univ. Edin., 1876.)

A.—The effect of foxglove (digitalis) on the heart is to strengthen its action, giving tone to it, and reducing the number of its pulsations, and thus, through the heart, influencing the strength and character of the circulation in the blood-vessels generally. It also acts as a diuretic. On these properties are founded most of its uses. It is employed in cases of heart-disease, where it is wished to lessen the force of the circulation, and give tone to the heart's action; as in simple hypertrophy, in increased action not dependent on organic disease, in some forms of functional palpitation, in aneurism of the aorta, and in active hæmorrhage, where the pulse is quick, full, and hard. Its employment is not advisable in cases of hypertrophy originating from obstruction, or from regurgitation due to valvular disease. In certain forms of insanity it is much used; and in cases of mental excitement, accompanied with a full and bounding pulse, it is efficacious as a sedative. In delirium tremens it has been given in very large doses with apparently good effect, but occasionally with failure. As a diuretic in dropsies it is of very great value, especially in cardiac dropsy.

21. *Q.*—What is the constitution and average dose of the following pharmacopœial preparations:—Glycerinum acidi tannici, linimentum camphoræ, tinctura chloroformi composita, infusum gentianæ compositum, mistura ferri composita, mistura cretæ, pilula plumbi cum opio, and pilula rhei composita? and give a Latin prescription in full for an adult suffering from chronic bronchitis. (R. C. S. Eng., 1876.)

A.—*Glycerinum acidi tannici* consists of tannic acid and glycerine in the proportion of one of the former to four of the latter. Dose, min. 10 to min. 30. *Linimentum camphoræ* contains camphor and olive oil in the proportion of 1 to 4 respectively. Used as an external application. *Tinctura chloroformi comp.* consists of chloroform, rectified spirit and compound tincture of cardamoms. It contains 1 in 20 of chloroform. The dose is from min. 10 to min. 60. *Infusum gentianæ co:* contains gentian, bitter orange peel, fresh lemon peel and water. It contains 6 grs. of gentian in each fluid ounce. Dose, 1 oz. to 2 oz. *Mistura ferri composita* contains sulphate of iron, carbonate of potash (which, by decomposition, become converted into sulphate of potash and carbonate of iron), myrrh, sugar, spirit of nutmegs, and rose water. 1 gr. of carbonate of iron is contained in one fluid ounce of the mixture. Dose 1 oz to 2 oz.

Mistura cretæ contains prepared chalk, gum acacia, syrup and cinnamon water. The proportion of chalk is about 13 grs. in each fluid ounce. Dose, 1 oz. to 2 oz.

Pilula plumbi cum opio contains acetate of lead, opium, and confection of roses. The proportion of opium is about 1 in 8. Dose, grs. 3 to grs 5.

Pilula rhei composita contains rhubarb in powder, socotrine aloes, myrrh, hard soap, oil of peppermint and treacle, The rhubarb is about 1 in 4. Dose, gr. 5 to gr. 10.

Prescription for chronic bronchitis: R—Ammoniæ carbonatis gr. 30; spiritus ætheris fl., drs. 3; tincturæ scillæ fl: dr. $1\frac{1}{2}$; tincturæ camphoræ co: fl: drs. 3; tincturæ lavandulæ compositæ fl: drs. 6; infusi senegæ ad fl: oz. 8. M. fiat mistura. Capiat cochlearia duo magna, quartâ quâ que horâ.

22. *Q.*—From what sources can magnesia be prepared? Name all the preparations of magnesia in the British Pharmacopœia. (A.H.L., 1876).

A.—Sulphate of Magnesia may be obtained from dolomite, which is a carbonate of lime and magnesia. From the sulphate the carbonate is prepared, and from the carbonate magnesia itself. Magnesia was formerly prepared from bittern, the residual liquor left after crystallising common salt from sea-water. The preparations of magnesia in the Pharmacopœia are: magnesiæ and magnesiæ levis, magnesiæ carbonas, liquor magnesiæ, carbonatis, magnesiæ carbonas levis, magnesiæ sulphas, enema magnesiæ sulphatis.

PRACTICE OF MEDICINE.

1. *Q.*—Give the symptoms, diagnosis, and treatment of emphysema of the lungs. (A. H. L. 1874).

A.—There are two forms of the disease known as emphysema, viz., pulmonary or vesicular emphysema, and interlobular or interstitial emphysema. In the former there is "misshapen enlargement of the air-cells of the lung, with dilatation and blending of them into one great cyst, with gradual effacement of the functional blood vessels distributed over their walls;" there is also "anæmia of the lung in the affected parts tending to dilatation of the right side of the heart and anasarca." In the latter form of emphysema the air infiltrates the meshes of the interlobular or subpleural areolar tissue.

The symptoms of emphysema are permanent shortness of breath, increased to dyspnœa by exercise; dusky countenance, cold extremities, cough with scanty expectoration of thin mucus, which may be increased by the supervention of a bronchitic attack. Percussion gives a morbidly clear sound extending lower than usual, not amounting, however, to a tympanitic sound. On auscultation the respiratory murmur is found to be weak and indistinct, the expiration and inspiration are prolonged, and in some cases there is a dry crepitation with occasional loud clicking sound. The heart's impulse is felt in the epigastrium. Bronchitis usually co-exists with emphysema. Anasarca and ascites are common sequelæ, owing to the circulation through the lungs being impeded, and hypertrophy with dilatation of the right side of the heart being produced.

The treatment must usually consist in the treatment of the co-existent bronchitis, beyond which little can be done. Opium may be given. Dry cupping between the shoulders is sometimes useful. When an attack threatens, an emetic or purgative is of great service. Warm clothing, daily use of baths, regular and moderate meals and aperients are precautionary measures.

2. *Q.*—Describe the symptoms and treatment of hæmatemesis. (Univ. St. Andrews, 1874).

A.—The symptoms of hæmatemesis or hæmorrhage into the stomach causing vomiting of blood are as follows:—Blood is ejected either by mere regurgitation or by vomiting of a more or less violent character. The blood discharged is generally more or less mixed with food or other materials from the stomach. The characteristics of the blood are—non-aëration, brown or black colour, grumous like "coffee-grounds," soot or tar, acid in reaction. If the blood be coagulated, the clots are firm, irregular, and broken up. The corpuscles are found by microscopic examination to be altered in shape. If the blood has not remained in the stomach any length of time before its ejection, it may be almost unaltered and bright, the amount of change being in proportion to the length of time during which it has been acted upon by the gastric juice. Some blood frequently passes by the bowels, giving a "tarry" character to the stools. In addition to these symptoms, there will, of course, be the general symptoms produced on the constitution by loss of blood; these varying in amount with the extent of the hæmorrhage.

Treatment.—Strict bodily rest must be enjoined, and the stomach must be kept in repose. In severe cases nutriment must be administered per rectum only: when the case is of a less dangerous character, however, small quantities of cool liquids may be allowed by the mouth. The patient should suck and swallow small lumps of ice. The remedies to be administered are gallic acid, or acetate of lead and opium, and turpentine. Violent attempts at vomiting may be restrained by hydrocyanic acid. Sinapisms should be applied to the epigastrium. Stimulants may be required if the collapse is excessive, and if so, they should be given by injection. The hæmorrhage may be vicarious of menstruation, and in this case must be treated accordingly.

3. *Q.*—Give an account of the course of a typical case of measles, stating the complications that are liable to occur with it or to follow it.

(Camb. Univ., 1874).

A.—Measles (rubeola, morbilli) is an infectious fever, accompanied by a characteristic eruption, which most usually attacks children, though persons of any age may take it. A second attack is rare. Its course is as follows: there is an incubative period of about eight days after exposure to the infection; then the disease sets in with chilliness, rigors, or even convulsions. Pyrexia follows, the temperature rising to 101° or 102°; or even as high as 104°; this is followed by the catarrhal symptoms characteristic of the disease. The eyes become watery and sore, there is constant watery discharge from the nose, with sneezing and, occasionally, epistaxis. There is a feeling of fulness in the frontal sinuses, and some soreness of the throat. Cough, quick breathing, tightness, and uneasiness in the chest may also occur. There is some epigastric pain and tenderness, with vomiting occasionally. The bowels may be either relaxed or constipated. About the fourth day the eruption appears. It commences usually on the face, especially the forehead and, spreads thence to the trunk and limbs. It may appear on the limbs first. The rash commences as small red scattered points, which gradually enlarge, become raised and papular, and tend to form patches of an irregular crescentic form. The colour may be rose-coloured, dark raspberry, lilac, yellowish or brownish red. The rash gradually increases for about twelve hours, and then begins to subside, disappearing in the same order in which it appeared. There is then some desquamation of the cuticle in powdery scales. The catarrhal symptoms increase up to the height of the eruption. There is inflammation of the conjunctiva and of the mucous membrane of the nose, mouth, and throat. The Eustachian tube may be involved, and cause deafness. The tongue is usually moist, furred, and the papillæ red and enlarged. More or less extensive bronchial catarrh exists with cough, and rhonchal fremitus. The temperature increases up to the height of the rash, but does not usually rise above 103°. Defervescence occurs by crisis, from the fourth to the tenth day. The urine is febrile, and deposits lithates.

The complications which may occur during or after an attack of measles are the following :—

1. Affections of the respiratory organs. These may become dangerous. They are laryngitis, acute or chronic, chronic bronchial catarrh, lobular collapse, croupous pneumonia, acute or chronic phthisis, &c. 2. Acute tuberculosis. 3. Inflammation about eyes, nose, and ears. 4. Inflammation of glands of neck, &c. 5. Severe diarrhœa, which may become chronic. 6. Acute Bright's disease. 7. Diphtheritic or gangrenous inflammation of the labia.

4. *Q.*—Describe the symptoms of Addison's disease, and the morbid appearances found.
(F. P. S. Glasgow, 1876).

A.—The principal symptom of the disease of the supra-renal capsules known as Addison's disease is a peculiar cachexia, setting in gradually, and without any apparent cause. The patient becomes languid, debilitated, and indisposed for any effort, becoming at length quite prostrated. There is marked anæmia, feebleness of heart's action, soft, weak, and compressible pulse, tendency to giddiness and faintness, and a gradual discolouration of the skin which assumes a bronzed appearance. This is due to the presence of yellowish brown pigment granules in the rete mucosum. It extends all over the body, but is not uniform; the most exposed parts being most markedly affected. The mucous membranes are discoloured, the lips becoming of a mulberry hue, and pigment has also been described in the structures of the eye. There is some epigastric pain, sometimes severe; nausea and vomiting may also be present. The digestive functions are disturbed, and there may be diarrhœa or constipation. The tongue is red and moist. The temperature is usually low; the urine diminished, of low specific gravity, and deficient in solids.

The morbid appearances found in the supra-renal bodies after death from this disease are as follows: The organs are firm, and nodulated, occupied by a soft, semi-translucent, greyish, or greenish-grey homogeneous substance, which becomes pink on exposure to the air. This becomes firmer and undergoes caseous degeneration, forming yellowish, opaque, cheesy nodules, or a creamy-looking fluid. Calcification may occur, and cretaceous granules may be formed. Under the microscope the grey material is seen to consist of a fibrillated stroma containing numerous lymphoid corpuscles, while the caseous matter consists of altered cells, nuclei, granular matter, and oil. There may also be found enlargement of the neighbouring absorbent glands, enlargement of the solitary glands of the small intestines, ecchymoses, or small ulcers of the stomach, atrophy of the mucous coat of the alimentary canal, and enlargement of the spleen. The composition of the blood is not materially altered in uncomplicated cases.

5. *Q.*—Detail the symptoms, physical signs and progress of a case of acute pleuritis, and give the therapeutical indications. (Apoth. Hall, Dublin, 1874).

A.—Acute pleuritis, pleurisy, or inflammation of the pleura is attended with the following characteristics:—It may be divided into three stages. 1. The stage of inflammation. 2. The stage of effusion, 3. The stage of removal of effusion. The symptoms are as follows: Locally, there is acute stabbing or cutting pain in the side, either in the infra-mammary or infra-axillary region, which is increased on coughing, or taking a deep breath. The breathing becomes hurried, irregular, and shallow. There is some cough of a short, hacking character, with very slight mucous expectoration. The patient lies on the affected side at first, but later on either side. If a large amount of fluid be poured out, there is dyspnœa. The general symptoms include pyrexia, which is however not very marked, frequent pulse, disturbance of the digestive organs, headache, and the presence of small quantities of albumen in the urine. As the effusion takes place, the acute symptoms somewhat abate, the act of coughing is less painful, but the respirations are still quickened. The third stage, that of absorption, is characterised by a freedom from pain and cough, and the disappearance of the fever. The respirations gradually become normal. The physical signs in the early stage are diminished, movement of the affected side: friction fremitus very rarely; friction-sound commencing as a slight grazing, but becoming louder when lymph is formed. In the stage of effusion the side is enlarged, and the intercostal spaces more or less obliterated; movement is diminished or absent; there is dulness on percussion over the area occupied by fluid, this area being moveable on change of posture of the patient; the breath-sounds are diminished below, but exaggerated above; there may be friction-sound at the margin of the dulness; vocal resonance is diminished below, but increased above. With the stage of absorption, the above signs gradually disappear. Dulness may remain for some time.

The indications for treatment are:—to subdue the inflammation, and diminish the amount of fluid poured out; to promote the absorption of the fluid; to remove them if they cannot be absorbed; to relieve symptoms and to support the patient. The first indication may be fulfilled by keeping the affected side at rest by strapping, and by administering aconite, or tartar emetic. Opium should be used to relieve pain. The absorption of the fluid may be promoted by counter irritation by blisters or iodine liniment, and the administration of diuretics, diaphoretics and purgatives. If the fluid cannot be absorbed, paracentesis thoracis may be employed, by the aspirator or trocar. With regard to special symptoms; pain may require morphia hypodermically, hot fomentations, poultices, or sinapisms. Cough may be relieved by sedatives. Patient should not be kept low, but stimulants must be given sparingly at first.

6. *Q.*—Describe the symptoms and treatment of

acute rheumatic fever, and mention its complications.
(A. H. L., 1876).

A.—Acute rheumatic fever, or acute rheumatism, usually commences with well marked chills and rigors. Pyrexia soon follows, and then the joints become affected. There is a feeling of general stiffness and soreness, the patient's aspect becomes one of pain and suffering, and there is considerable restlessness and weariness, with inability to move without severe pain. Perspiration is usually copious, and the sweat has a peculiar acid smell, with an acid reaction. The pulse is full and strong; the tongue thickly coated, and the patient suffers much from thirst and constipation. The urine becomes febrile, with a copious deposit of urates, and sometimes contains some albumen. There may be slight delirium. The joints usually attacked in rheumatic fever are those of a middle size, such as the elbows, knees, wrists, and ankles. The various joints may become successively involved, and the symptoms frequently subside in one articulation to appear in others. A joint when affected becomes red, hot, and swollen, with considerable pain and tenderness, which increases at night. The slightest movement causes great pain. The pain, which is of a dull, aching character, is often extremely severe. The temperature rises for about a week, and usually ranges between 100° and 104°. The descent is gradual. Hyperpyrexia may occur, the thermometer rising as high as 109°, 110°, or 112°.

The indications for treatment are:—to make the patient as comfortable as possible, and protect him from exposure; to promote free excretion; to neutralise or expel the poison; to attend to the joints, and to treat symptoms and complications as they may arise. The patient should be placed between the blankets, wearing flannel, and the joints should be wrapped in cotton wool. It is a good plan to wrap up all the joints, and not only the affected ones. The diet should consist of beef-tea and milk, and plenty of lemonade or barley-water may be allowed to relieve thirst. As a rule, alcoholic stimulants will not be required. The bowels must be kept fully opened. The remedy most employed is the bicarbonate of potash, which may be given in doses of half-a-drachm or more every two or four hours, or it may be administered as a drink, half-an-ounce being allowed in the 24 hours, dissolved in a quart of barley-water. Opium is very valuable, and may be given in doses of from ¼ to 1 grain every three or four hours. Other remedies which have their advocates are the salts of soda, nitrate of potash, iodide of potassium, phosphate of ammonia, &c. Lemon juice has also been used. Tincture of actæa has been much recommended, and the most recent remedies are salicine and salicylic acid, which are still on trial. If the pain in the joints is very acute, poultices and warm fomentations give relief. Much care will be required during convalescence.

The complications of rheumatic fever are some of them very serious in character; they include cardiac affections, pericarditis, endocarditis, resulting in valvular disease, myocarditis, and fibrinous deposits in the heart; pulmonary affections, pleurisy, pneumonia, bronchitis. Cerebral and spinal meningitis occur very rarely. In children, chorea may occur as a complication of rheumatic fever.

7. *Q.*—Give symptoms, diagnosis, and treatment of tubercular meningitis. (A. H. L., 1876).

A.—Tubercular meningitis, or acute hydrocephalus, may be preceded by languor, inactivity, nausea, loss of appetite, vomiting, hot skin, dry tongue, flushed face, and other symptoms of pyrexia. It may begin with sudden and violent pain in the head, with loud screaming, followed by convulsions, or it may come on obscurely in the course of febrile disorders or of the exanthemata.

When the disease has actually set in, head symptoms appear. There is acute, darting pain in the head, with heat of the scalp; the eyes are suffused, very sensitive to light, the countenance is flushed, and the skin hot and dry. The pupils are contracted; the patient holds the head, tosses about, and is very restless, grinds the teeth, and totters in his gait. The tongue is furred, the breath bad, pyrexia moderate, not often rising beyond 101° or 102°, pulse frequent, urine concentrated but deficient in chlorides, phosphates, and urea. Delirium and convulsions may occur.

After a time the symptoms become less violent, and the pain less acute. Signs of implication of the cranial nerves ensue, as dim or double vision, tinnitus aurium and deafness; twitching of the face, strabismus, &c. The face assumes a worn, aged, distressed expression. Diarrhœa may occur, with cool sweats, slow pulse, sighing, and moaning respiration. Marked general motorial disturbance ensues later on with frequent and violent fits of convulsions or tetanic rigidity. There is subsultus tendinum, tremors of the limbs, local paralysis, or hemiplegia. The pupils are dilated and motionless. Death ensues from gradual coma, or during a fit of convulsions.

The diagnosis of tubercular meningitis may have to be made from spurious hydrocephalus, in which there is a pale cheek, a cool skin, and an absence of febrile symptoms. The tubercular nature may be suggested by hereditary tendency, by the presence of tubercle in the lungs, or manifestations of the tubercular diathesis.

From infantile fever tubercular meningitis may be distinguished by the absence in the former of morbid sensibility to light, of the peculiar darting pain in the head, and of the squinting and rolling of the eyeballs, which occur in the later stages of the latter disease.

The treatment of tubercular meningitis will consist in the application of leeches, of ice, and cold compresses to the head in the early stages. If in a child the gums are hot and swollen they should be lanced. Purgatives must be administered at the outset, and then iodide of potassium may be given. The patient must be kept quiet, in a well-ventilated room, the diet limited to beef-tea and milk. Convulsions are best treated by bromide of potassium continuously, in large doses. Stimulants may be required. The feet must be kept warm, and the condition of the bladder attended to.

8. *Q.*—Describe a case of acute pneumonia in the adult; giving the causes, symptoms, and physical signs of the different stages, and the sequelæ of the disease. (R. C. S. Eng., 1876).

A.—An attack of pneumonia, or inflammation of the lungs, is usually the result of a "cold." It may be caused by vicissitudes of temperature, sudden chills, exposure to cold and wet, or may be set up by injuries to the chest, as fractures of the ribs, perforating wounds, &c. Pneumonia may also occur, secondarily, in some low fevers, and in measles, small-pox, pyæmia, &c.

An attack of pneumonia usually goes through three stages, though some authors have described a fourth preliminary stage. The three generally noticed are—1. The engorgement stage. 2. The exudation or red hepatization stage. 3. The grey hepatization stage. The symptoms and physical signs are as follows:—

The disease sets in with rigors, followed by pyrexia; there may be vomiting, great prostration, headache, delirium, or restlessness. Locally, the patient complains of pain in the side, usually about the mammary region; there is dyspnœa, rapidity of breathing, and short, hacking cough, with viscid adhesive expectoration of a "rusty" colour. Under the microscope the sputum may be seen to contain blood-discs, epithelium, exudation-cells, pigment cells, &c. The general symptoms are those of great pyrexia, with prostration and depression. The skin becomes hot and dry, the temperature rises to 102°, 103°, or 104°, and may even go up to 107°. The cheeks are flushed, and the expression of the face may be either anxious or heavy, and stupid. The pulse ranges from 90 to 120, or more. The tongue is dry; there may be dysphagia, vomiting, and diarrhœa. The urine is febrile in character, deficient in chlorides, and may contain albumen. The disease sometimes takes on a typhoid or adynamic form, the tongue becoming dry and brown, with sordes, and low nervous phenomena as delirium, coma, convulsions, &c., supervening.

Physical Signs.—In the first stage, that of engorgement, the respiratory movements are deficient, the vocal fremitus is increased, the percussion sound is very little altered, but auscultation reveals *fine crepitation or true crepitant rhonchus*, which is characteristic of this stage. In the second, or red hepatization stage, there may be slight enlargement of the side, with dulness on percussion over the affected part. The vocal resonance is intensified, and there is bronchial respiration, bronchophony, and sometimes pectoriloquy. In the third stage there is large crepitation or *redux crepitant rhonchus*, with thin bubbling râles. The other signs gradually disappear, but slight retraction of the chest may follow.

Phthisis may occur as a sequela of the disease, or the pneumonia may remain in a chronic form. Gangrene of the lung may also occur as a sequel.

9. *Q.*—Describe the treatment of a case of typhoid (enteric) fever from the earliest stage to complete convalescence. (R.C.P.L., 1874.)

A.—The patient should at once take to his bed, and remain there until convalescence is fully established. Great care must be taken in the regulation of the diet, which should be entirely liquid, nutritious, and non-irritating, and should consist mainly of beef-tea, milk, beef-juice, custards, &c.; toast-water and mucilaginous drinks may be given. If strict and careful attention be given to diet, many cases may be safely carried through to a successful termination, without any medicine being administered. Great care must also be taken to disinfect the alvine secretions, to remove all filth, and to ensure a pure water supply.

With regard to the administration of alcoholic stimulants, much difference of opinion exists, and the question is still an unsettled one. It is only in the advanced stages, and when the circulation is feeble and the strength much reduced, that they will usually be required. The best plan generally is to treat symptoms as they arise. Heat and moisture should be applied over the abdomen by fomentations, poultices, turpentine stupes, &c., for the relief of pain, tenderness and tympanites. If, however, the tympanites be very great, enemata of turpentine or assafœtida may be necessary; and great pain may require opium or morphia for its relief. Excessive diarrhœa may be checked, particularly if the patient be very weak, by enemata of starch and opium, or the internal administration of Dover's powder, acetate of lead with opium, sulphuric acid, chalk mixture, alum, bismuth, &c. If intestinal hæmorrhage occur, tannic or gallic acid, turpentine or perchloride of iron may be given. Occasionally there is constipation, and in such cases great care must be exercised in the administration of aperients. A teaspoonful of castor oil, or a simple enema every third or fourth day may be administered under these circumstances. If perforation or peritonitis come on, absolute rest, very small quantities of food, and the free use of opium are essential.

When convalescence commences, much care must still be exercised in the regulation of the diet, and the bowels. Should an aperient be necessary, the best will be a small dose of castor oil, or a simple enema. Wine is useful at this time. No solid meat or vegetable should be given until a fortnight after the stools have become solid. Recovery may be promoted and strength restored by change of air and tonics, and cod-liver oil will also be useful.

10. *Q.*—Describe the symptoms, course, and treatment of Herpes Zoster. (K.Q.C.P.I., 1874.)

A.—Herpes Zoster, or the shingles, is a cutaneous eruption dependent on some disease of the trophic fibres of the spinal nerves. Tenderness and pain are felt in a certain belt of skin on one side. After a day or so, red points are seen arranged in long oval groups, and soon each point shows a vesicle. These vesicles are pellucid, and heaped together, but not confluent. Later on, they may contain blood-stained serum, or even pus, and in a few days they dry up into brownish scabs, which fall off in about ten days, leaving little cicatrices which may or may not remain. The eruption is generally confined to the course of one nerve, rarely extends beyond the mesial line of the body, and still more rarely, if ever, is it symmetrical. Distressing constitutional symptoms may occasionally precede the appearance of the vesicles. The disease runs a definite course, and when not interfered with completes its development and defervescence in about ten days. It may occur at any age and in either sex; and no special condition of ill-health can be stated as predisposing to it. The treatment required is simple, as the disease forms its own limits. The parts affected should be covered with some cooling powder, as starch and oxide of zinc, and enveloped in cotton wool. Severe intercostal pain may require aconite and opium, and the burning sensation may be relieved by painting with collodion. Attention should be given to the regulation of the stomach and digestive organs, and malt liquors should be avoided.

11. *Q.*—Describe a case of delirium tremens, and its treatment. (A.H.L., 1874.)

A.—Delirium tremens is a peculiar form of alcoholic poisoning, produced by too free an indulgence in intoxicating fluids, or by even moderate indulgence in stimulants without a proper corresponding amount of solid food. An attack of delirium tremens is usually preceded by some premonitory symptoms, disturbed sleep, or absence of sleep being generally a marked one. There is also usually some general discomfort and feebleness, agitation, mental confusion, and low spirits. The digestive system is deranged, causing anorexia, foul tongue, and constipation. After these symptoms have lasted a longer or shorter time, an actual attack of delirium tremens occurs. The patient becomes quite sleepless, or gets merely short uneasy dozes. The mind becomes confused, restless, and excited—the patient wandering off and rambling incoherently. Various delusions and hallucinations exist, and the patient often fancies he sees or hears objects and sounds of a hideous character. The appetite is lost: the patient complains of nausea, and the bowels are costive. The expression of the face is anxious and wandering; there is constant twitching of the facial muscles and tremulous motion of the hands. The patient distrusts those around him and thinks they are going to poison or injure him; and these feelings may culminate in absolute mania.

The pupils are usually dilated, the skin moist and clammy, pulse large and soft, or small and frequent; the tongue and breath foul; there is great thirst, loss of appetite, nausea, &c.

In favourable cases, at the end of forty-eight or seventy-two hours, a critical sleep occurs, which lasts twelve or more hours, the patient waking cured but weak. In fatal cases, the wakefulness continues, with delirum, muttering and subsultus tendinum, succeeded by great prostration, coma, convulsions, or fatal syncope; typhoid symptoms may also set in with dry, brown tongue, sordes on the teeth, and low nervous phenomena.

Treatment. All forms of alcoholic stimulants, especially wine and spirits, must be withdrawn, or reduced in quantity. As much nourishment as possible must be introduced into the system. Strong beef-tea, beef-juice, soups, milk, eggs beaten up, &c., must be given at frequent intervals night and day. If the patient refuse food, nutrient enemata may be employed.

Sleep must be procured by opium or morphia ($\frac{1}{8}$ to $\frac{1}{2}$ a grain of morphia may be administered hypodermically), hydrate of chloral in 20 grain doses every hour or two, bromide of potassium, and cannabis indica. Some authorities advise the administration of tincture of digitalis in large doses (2 drachms to 1 oz. every four hours), powdered capsicum, tartar emetic, or chloroform.

Various symptoms must be combated as they arise. Adynamia must be met by stimulants,—ammonia, ether, camphor and brandy. The patient should be kept quiet in a cool, well-ventilated apartment, and treated kindly and firmly, and well watched.

MIDWIFERY.

1. *Q.*—Give the dimensions of brim and outlet of pelvis, and describe the course which the head takes in natural labour. (A. H. L., 1876).

A. The dimensions of the brim and outlet of the pelvis are on an average as follows :—

	Brim.	Outlet.
Transverse	5 in.	4 in.
Oblique	5 in.	5 in.
Conjugate	4½ in.	5 in.

The course taken by the fœtal head when it enters the pelvis in the first position is somewhat as follows : —Before reaching the pelvis the long diameter of the head is parallel to the brim: on entering the pelvis it assumes the occipito-frontal obliquity, with the occiput directed downwards, and towards the left acetabulum. As the head advances, the long diameter assumes a parallelism with the antero-posterior (or conjugate) diameter of the pelvis, the forehead lodging in the hollow of the sacrum, and the occiput turning towards the pubis. This movement is called *rotation.* Before this rotation is completed, the chin leaves the sternum, and the occiput becoming wedged against the pubic arch remains stationary, while the forehead and face descend along the perineum, pressing against the coccyx, and the head at length emerges under the pubic arch. This constitutes the process known as *extension.*

2. *Q.*—Describe the method of performing podalic version. (Qu. Univ., Ireland, 1875).

A. The object held in view in the performance of podalic version is the extraction of the child by the feet. In order to accomplish this, the patient should be placed on her left side, and chloroform may be administered. This is of great value in all cases of turning: it curbs the ordinary uterine contractions, prevents unexpected jerking movements of the patient, and relaxes the abdominal muscles. The hand of the operator, being well lubricated, is now introduced into the vagina, the fingers being gathered together, and the hand forming a kind of cone. The choice of hand depends on the nature of the case, and the amount of ambi-dexterity possessed by the operator. The left hand is the one more easily adapted to the curves of the pelvic axes.

The hand having been selected, is now passed through the os uteri, and up in front of the child. This must be done very gently, and during the intervals between the pains. During a pain the hand should be kept still and flat. The extremities of the child having been found, and the operator having assured himself that they are the feet, and not the hands, the feet are drawn down over the front of the child, during an interval of pain. As the feet are drawn down, the head will ascend. The extraction of the child may now be accomplished gradually during a pain.

3. *Q.*—What are the several causes of retained placenta, and how would you treat each respectively? (A. H. L., 1876).

A.—The three chief causes of retained placenta are:—1. Inertia of the uterus; 2. Irregular contraction of the uterus; 3. Morbid adhesion between the uterus and placenta.

1. The treatment of inertia of the uterus will depend much upon the presence or absence of flooding. If the hæmorrhage be great, the placenta must be removed at once, either by traction on the cord, or by the intro-

duction of the hand. If hæmorrhage be not actually occurring, the uterus may be stimulated to contract by friction and pressure on the abdomen and groin, and steady traction may be made upon the cord. Ergot of rye and stimulants may be administered internally.

2. Irregular contraction of the uterus may be of three kinds.

(*a*). A contraction of the fibres of the cervix uteri to a greater degree than those of the body and fundus.

(*b*). "Hour-glass contraction." The fibres around the body of the uterus are thrown into a state of permanent contraction, the remaining portion being only in a state of moderate contraction, the result being that the uterus assumes somewhat the form of an hour glass, the placenta being contained in the upper cavity.

(*c*.) Contraction of the circular fibres, giving the uterus the shape of a long cylinder, narrower than usual.

In the first form of irregular contraction, steady and firm traction on the cord with very firm pressure over the uterus will generally suffice to overcome the spasmodic action and release the placenta: if not, one or two fingers may be introduced into the os uteri.

In the second and third forms, the hand must be introduced into the uterus, the placenta wholly detached, and the uterine contractions so aided by external pressure as to expel both hand and placenta.

3. Morbid adhesion between the placenta and uterine wall. This may be due to inflammation, with effusion of plastic lymph. The treatment must consist in the introduction of the hand, and the detachment of the placenta.

It may sometimes be found impossible entirely to detach, and in this case much force must not be used, but as much of the placenta removed as possible, and the rest left to come away with the lochia. If any be thus left, the uterus should be washed out at intervals with Condy's fluid and water, so as to prevent decomposition, and diminish the danger of septicœmia.

4. *Q.*—Under what circumstances is prolapse of the funis likely to occur, and what treatment will you adopt, when it has been detected during the first stage of labour? (K. Q. C. P. I., 1875).

A.—Prolapse of the funis may occur under the following circumstances: 1. When the child presents transversely or by the breech, or by the feet or knees. 2. When the child is very small and the quantity of liquor amnii very large. 3. When the membranes rupture suddenly and there is a forcible rush of liquor amnii. 4. When the cord is of excessive length. 5. When the placenta is situated low down near the cervix uteri, or when the funis is inserted into the lower edge of the placenta. The treatment of funis presentation consists in replacing it in the uterus and in such a position that it may not be pressed upon by the child's head, during the progress of labour. In order to effect this object various instruments have been devised. If the cord cannot be returned above the child it may be replaced in the angle formed by the junction of the sacrum and ilium. If these plans be tried and do not succeed, or if the descent of the head prevent their use, the forceps may be applied as soon as the head is within reach. The patient should be placed on her hands and knees so as to have the influence of gravitation. Turning the child may afford the best chance of saving its life if the patient has had children before, or if the pelvis is roomy and the soft parts well dilated.

5. *Q.*—Give an account of the pathology, symptoms and treatment of phlegmasia dolens. (Univ. Aberdeen, 1875).

A.—The principal pathological sign in phlegmasia dolens consists in a plugging of the principal veins with coagula. This was supposed by Dr. R. Lee to be due to phlebitis originating in the uterine and extending to the crural veins, but subsequent investigations have tended to upset the theory. The coagulation of the blood and consequent formation of a thrombus is supposed now to be due to the presence in the circulation of some morbid matter. Dr. Tilbury Fox thinks that the appearance of phlegmasia dolens is produced by obliteration of the lymphatics; this condition of the lymphatics being coincident with occlusion of the veins. The complete loss of power so marked in phlegmasia dolens may be caused by the pressure exercised by the gelatinised fibrine upon the nerve trunks.

The symptoms of phlegmasia dolens, which usually comes on from the fourth or fifth day after parturition to the twentieth or later, are as follows: There is usually some sensation of chilliness, more or less rigors, headache, faintness, rapid pulse (120 or more), a dry and furred tongue; there is pain round the pelvis, which shortly becomes localised in one inguinal region; the pain extends down the limb of that side, which swells and pits on pressure ; the temperature of the affected part rises and the leg continues to swell until it becomes tense, glazed, and white : the veins feel like hard cords, and the lymphatics appear as red lines on the surface. The lochia and the milk are usually suppressed. After a variable period of from one to ten weeks or more the disease may begin to disappear ; the pain and great tenseness decline and the leg pits again on pressure. The swelling, however, takes a long time to disappear. The veins may remain permanently varicose and the use of the limb be imperfect.

Treatment.—The treatment must consist in perfect rest in bed with the limb straight or slightly elevated: hot fomentations may be applied, and flannels wrung out with hot water and sprinkled with turpentine or laudanum frequently afford great relief. Internally a gently stimulating treatment may be adopted from the first. Carbonate of ammonia and hydrochloric acid will be found useful and may be combined with a regular animal diet, and port wine. The vagina may be injected with warm water if the lochia be stopped, and if the discharge be offensive a little permanganate of potash may be added. The alvine secretions are very offensive, and mild purgatives must be frequently given. Pain and sleeplessness will require opium and chloral. When the swelling is beginning to subside the limb may be carefully bandaged with flannel rollers.

During convalescence quinine, iron and the mineral acids, may be given; the limb may be gently rubbed with stimulating liniments, but friction must be carefully and cautiously used, as there is a danger of detaching clots in the veins, an occurrence which would probably cause embolism and sudden death.

6. *Q.*—Give the symptoms, treatment, and supposed causes of puerperal mania. (A. H. L., 1875).

A.—The term "puerperal mania," is generally considered as including three distinct forms of insanity.

1. The insanity of pregnancy.
2. Mania of parturition.
3. *a.* Puerperal mania, and *b*, puerperal melancholia.

It is the two latter, however, that demand more special attention.

The *mania of parturition* is usually very transient in its effects, and depends only upon the severe pain incident to a difficult labour. The periods of the labour at which it most frequently occurs are, first as the head passes through the os uteri, and secondly, when it emerges through the os externum.

Puerperal mania proper, however, usually commences about the first or second week after delivery, though it may come on earlier.

The premonitory symptoms are exhaustion, feverishness, and restlessness, want of sleep, headache, furred tongue, disordered digestion and constipation, suppression of the milk and lochia, and sometimes albuminous urine. After this, the patient becomes talkative, or very taciturn, the countenance is vacant, eyes half closed, or vacantly staring, head hot, skin soft and relaxed; the pulse becomes quick and uncertain, the patient is suspicious of those about her, and exhibits suicidal or homicidal tendencies, especially towards her offspring. There is also a remarkable tendency, even among refined women, to profanity and obscenity of language and gesture. The form of insanity known as puerperal melancholia, varies somewhat in its symptoms from the above; it comes on generally somewhat later, about a month after parturition. The patient becomes silent and moody, takes no interest in anything, and develops delusions of very distressing character, one of the most common being that she has by some act placed herself beyond the hope of salvation. In this form of disease, the prognosis is more unfavourable than in the other form of puerperal mania, as it more frequently ends in permanent insanity.

The *treatment* of puerperal mania must include the support of the system by nourishing food, and a moderate use of stimulants. Patients will frequently refuse food, and require to be fed by force. Insomnia, which is very troublesome, will require the administration of morphia, chloral, or bromide of potassium. Cannabis indica and veratrum viride are recommended by some authors. Purgatives will be necessary for the regulation of the bowels, but they must be given with caution. The patient must be very carefully watched, and placed under the care of an intelligent and judicious nurse, friends must be kept from the room, and as much quietness as possible procured. When the acute stage is over, great care must still be used, but plenty of animal food with stimulants, iron and quinia may be given. Convalescence will be hastened by change of air and scene.

Causes.—Puerperal mania is not unfrequently hereditary. Sleeplessness may be a predisposing cause. Among the exciting causes are cold, irritation, irregularities of diet, mental distress, excessive secretion of milk, &c. As to the proximate cause or pathology, opinions vary much. Some authorities attribute it to disease of the uterine system, some look upon it as an inflammation of the brain or its membranes. Marshall Hall believed it to result in general from all the circumstances following parturition combined, but chiefly from the united influences of intestinal irritation and loss of blood. There can be little doubt that the nervous shock, vascular change, disturbance of respiration and circulation, exhaustion, in many cases loss of blood, &c., which are incidental to parturition, leave the nervous system peculiarly susceptible to the exciting causes above named.

7. *Q.*—What are the signs of the death of the fœtus in utero, and mention their relative importance.

(Qu. Univ., Ireland, 1875).

A.—It is very difficult to diagnose the death of a fœtus in utero; all the signs by themselves being more or less uncertain, and it is only by the concurrence of several that any certain conclusion can be arrived at. The following are the principal signs: cessation of movements of the child, subsidence or flaccidity of the abdomen, recession of the umbilicus, loose feel of the uterine tumour, and its rolling about in the abdomen, sudden flaccidity of the breasts, and suppression of the secretion, deterioration of health, bad appetite, sunken countenance, dark areola round eyes, fœtid breath, repeated rigors, &c. The most valuable of the above signs is perhaps that of the flaccidity of the breasts, as this seldom occurs from any cause except the death of the fœtus. The most direct evidence of the death of the fœtus may doubtless often be gained by auscultation, though even here some care is required. The simple fact of one's not hearing the beating of the fœtal heart at any one given visit must not be taken as conclusive evidence of the death of the fœtus, but if after hearing the heart pulsating distinctly, we find it gradually becoming inaudible, and continue so, the evidence will be very strong, and, if combined with the above symptoms, conclusive.

8. *Q.*—Describe a case of placenta prœvia, and its requisite treatment. (A. H. L., 1875).

A.—Placenta prœvia, or placental presentation, consists in the attachment of the whole or part of the placenta over the cervix uteri. During the earlier months of pregnancy no sign indicates the existence of this condition; but abortion may take place from uterine irritation, caused by the attachment of the placenta to the cervix. The principal symptom occurring during the later months consists of hæmorrhage, known as "unavoidable hæmorrhage," to distinguish it from that caused by detachment of the placenta when in its normal position, which is called "accidental hæmorrhage."

In a case of placenta prœvia, the hæmorrhage will probably be the first symptom to attract attention, and this will probably occur about three weeks before labour commences. A vaginal examination of the patient will reveal a swollen and thickened os, and if the os be dilated, the placenta may be felt within it. The placental bruit will be most distinctly heard in one of the iliac regions. The flooding recurs after a week or so, and when labour commences, the first contraction of the uterus will cause it to be very profuse.

The treatment of placenta prœvia includes the employment of the following methods; plugging, puncturing the membranes, version, and extraction or separation of the placenta.

The first treatment should be that of plugging, when the hæmorrhage occurs during the later months of pregnancy. For a plug to remain in the vagina only a very short time, a piece of sponge will be found good, but this will require constant changing. The best plug however consists of a hollow india-rubber ball introduced empty, and then inflated with air or iced water. Puncturing the membranes, formerly advised, is now seldom employed. Turning or version, is now the generally accepted treatment, and in cases where the os is dilated or dilatable, and the patient not greatly exhausted, it affords the best chance, both to mother and child. The hand being passed into the os on the side least covered by the placenta, the feet are seized and brought down. As the body of the child descends, its pressure on the placenta tends to suppress the hæmorrhage.

In those cases in which the mother is too much exhausted for turning, or in which the child is dead, the placenta may be separated and extracted. After delivery, care must be taken to secure a good permanent contraction, and to guard against subsequent hæmorrhage.

9. *Q.*—How would you distinguish breech presentation, and what would be your treatment.

(A. H. L., 1875).

A.—A presentation of the breech may be distinguished by vaginal examination. The breech will be recognised by its being round and soft, by the cleft between the buttocks, and by the organs of generation. It may, however, be confounded with a face presentation, if there is great swelling. In the latter, however, the bridge of the nose will be felt obliquely across the os uteri; and in the former the coccyx, more or less moveable, is felt close to the anus, joining the broader and firmer sacrum. Meconium may also be brought away on the finger, after examination in a breech presentation.

Treatment.—Early interference in breech cases is not required. As the breech passes, the perineum must be supported. It is as the umbilicus emerges that danger commences from pressure on the cord; this should be drawn down a little. If the pulsations of the cord are strong, time may be allowed for nature to act; if, however, they are very weak, labour must be hastened by drawing down the body of the child during a pain.

When the chest is brought through, if the arms be above the side of the head, they must be brought down by passing one or two fingers over the shoulder and drawing the arm down over the face. When the shoulders have passed out and the head has taken up its position at the brim, considerable delay may occur. Here, however, interference will not be necessary so long as the cord pulsate strongly and there is no other demand for immediate delivery. When the head is in the cavity, two fingers of the left hand may be introduced and placed in the mouth or on the upper jaw. Pressure being made, the chin will be depressed and the extraction facilitated. Pressure must be applied over the uterus from the time the chest is expelled. If the uterine power fail, or any circumstances demand speedy delivery, one or two fingers should be passed into the groin, and traction gently and steadily made during a pain. If there is much resistance to the passage of the head the forceps may be applied.

10. *Q.*—Give the symptoms of pelvic cellulitis, local and general. How do such cases generally terminate. (R. C. P. L., 1874.)

A.—Pelvic cellulitis usually comes on about two or three weeks after labour, but may also occur in connection with abortion, or, as a consequence of external violence, uterine disease, or a strumous state of the constitution. Its commencement is marked by a slight rigor; this is followed by pelvic pain which spreads into the hypogastric region. The temperature rises to 100° or 102°, and the pulse to about 100. The tongue is furred, there is constipation and nausea, with difficulty of micturition and defæcation. The patient lies on her back, with the thigh of the affected side flexed on the trunk.

In many cases there are no premonitory symptoms, the health of the patient merely falling gradually away. The pulse, however, is usually quickened from the first. On physical examination the lower part of the abdomen is found to be tender, and the vagina hot, dry and painful. After a time there is detected in the hypogastric region a diffuse swelling. This gradually becomes hard and well defined. It may be detected through the vaginal walls, and the cervix uteri will be found tumid and patulous, with an undulated and hard swelling around it.

If the morbid action proceed to suppuration, the general symptoms increase in severity and become hectic in character with night sweats and diarrhœa, and the swelling softens and discharges through the vagina, bladder, rectum, or abdominal wall.

The tendency of pelvic cellulitis is to recovery, resolution taking place in a great majority of cases, and the swelling being slowly absorbed. The fixation of the uterus often lasts for years, and in many cases remains permanently.

11. *Q.*—In what cases would you be justified in inducing premature labour? State the various methods which are used for that purpose. (A. H. L., 1874).

A.—The conditions which justify the induction of premature labour are the following:—Contraction of the pelvis or soft parts to such an extent as to preclude the passage of a fœtus at full time; the presence of pelvic or abdominal tumours, malignant disease and irreducible anteversion or retroversion of the uterus; uncontrollable placental hæmorrhage, cardiac or pulmonary disease producing urgent dyspnœa, convulsions, persistent vomiting, or diarrhœa.

Various methods have been adopted by different authorities for the induction of premature labour. They may be divided into two classes. Firstly, those which act on the uterus through the system, and secondly, those which act directly upon the organ itself. The methods included in the former class are galvanism, the administration of ergot, friction over the fundus uteri, and irritation of the breast by suction with an india-rubber apparatus. All these methods, however, are more or less uncertain in their action. The second class of methods are the following:—1. Puncture of the membranes. 2. Separation of the membranes round the os by the finger or uterine sound. 3. Passing an elastic bougie up between the membranes and uterine wall, and allowing it to remain until labour sets in. 4. Dilatation of the os uteri by sponge. 5. Injection of water against the cervix uteri. 6. Dilatation of the os uteri by means of Barnes's bags. The last named plan is that now most generally employed, and appears to be both certain and rapid.

12. *Q.* How is laceration of the uterus in labour produced? How would you recognise it, and what would be your treatment. (A. H. L., 1875.)

A. Laceration of the uterus during labour may be produced by three different classes of causes. It may be due to mechanical obstructions to delivery, to mechanical injury, or to diseased tissue of the uterus. The mechanical obstructions to delivery include pelvic contractions, occlusion or rigidity of the os uteri; obliquity of the uterus and abnormal development of the fœtus. Rupture may be caused in arm presentation if the uterus be allowed to contract upon the child before its position is rectified. Sudden uterine action in hasty labour, or after ergot, may cause laceration from its excessive violence. The pelvis may be deformed with sharp bony prominence, which may lacerate the uterus. As a cause of mechanical injuries, producing rupture, may be mentioned unskilled attempts to induce premature labour by puncturing the membranes and the criminal proceedings of abortion-mongers.

A diseased condition of the organ rendering it friable causes the uterus to give way during labour, as does the presence of intestitial fibroids.

The symptoms of a rupture of the uterus are sudden sharp pain in the abdomen with immediate collapse, and either with or without external bleeding. There is a sense of something giving way, the labour-pains are suspended, and the presenting part recedes. There is vomiting, the countenance becomes pale and ghastly, pulse small, rapid, feeble and fluttering, respiration quick and difficult.

Treatment.—Immediate delivery is the best treatment. If the os is undilated, Barnes's bags must be used and version performed; if the head does not recede the forceps may be applied. If the fœtus have escaped into the abdomen, the hand must be passed into the uterus and through the laceration, and the feet seized and brought down. Care must be taken not to bring down the intestine. If the child cannot be brought back through the uterine laceration, abdominal section must be employed. Stimulants must be given judiciously during the stage of collapse, and opium after delivery.

13. *Q.*—Describe the affections of the breast to which women are liable during lactation, and state how you would treat them. (A. H. L., 1876).

A.—During lactation women are liable to excoriation of the nipples. This is especially liable to occur in cases where the nipple projects insufficiently. During the intervals between suckling the excoriation scabs over, but when the child is re-applied the scab is torn off, and thus what is first a simple excoriation, becomes aggravated into a very painful affection—fissure of the nipple. The pain produced by this affection is most acute, so much so that the mother dreads the performance of her maternal duty.

The remedy for this affection is to cover the nipple with a shield which prevents the direct application of the childs lips. Time is then allowed for the sores to heal, and the healing process may be facilitated by bathing the nipple with a solution of borax and tannic acid.

Inflammation and abscess of the breast may also occur during lactation, especially with first children. The cause of this is an excessive amount of congestion of the breast from the secretion of milk. Exposure to cold, mental emotion, and too much motion of the arms when the breasts are enlarged, are also mentioned as causes. The symptoms are hardness and tension, with an inflammatory blush on the skin. If the fascia is involved, the pain is very severe, and extends into the axilla. The constitution suffers, the pulse becoming quick and full, and the skin hot with headache, thirst, &c. The breast feels nodulated, and the secretion of milk is for a time suspended.

After a time suppuration takes place, and the matter makes its way to the surface. This period is marked by shivering, heat and fluctuation in the tumour. Pointing frequently occurs near the nipple, the intervening substance is absorbed, the cuticle gives way, and the matter is evacuated. When the pus has been completely evacuated, the abscess soon heals, leaving some hardness for a time.

The treatment must consist at first in endeavours to subdue the inflammation, and prevent the formation of an abscess. Leeches may be applied for this purpose. Poultices and fomentations or cold evaporating lotions may be employed. Saline purgatives should be administered. The milk should be drawn off at intervals, and the breast supported in a sling.

If matter forms in spite of these measures, its production must be facilitated by constant poulticing; opium may be given to procure sleep.

With regard to opening an abscess of the breast, some difference of opinion appears to exist, but if the abscess be deep seated, and slow in progress, it should be opened, much time and pain being thus saved.

After the discharge of the matter, the diet may be improved, and tonics may be necessary. When inflammation has ceased, if the abscess still discharge, the breast may be strapped. If sinuses form, they must be laid freely open.

14. *Q.*—Give the symptoms of pregnancy at the fifth month. (R. C. P. L., 1875).

A.—The fifth month of pregnancy is about the period when quickening usually takes place. The uterus at this period will be found to reach about half way between the pubes and umbilicus. The uterine souffle or placental bruit, and the sound of the fœtal heart also begin to be audible about the same period, though the latter may be heard in the middle of the fourth month. About the fifth month also ballottement will be available, as a means of diagnosis.

PATHOLOGY.

1. *Q.*—Compare and contrast fatty and waxy (amyloid) liver as examined with the naked eye, and under the microscope. (Univ. Edin., 1875).

A.—A liver affected with fatty degeneration is increased in size. The surface is smooth, edges thickened and rounded, specific gravity diminished. When cut the surface appears mottled, the external fatty zone being opaque yellowish white, while the central portion is unaltered or hyperæmic. Microscopical examination shows fat cells in the outer zone of each lobule, deposited from the blood in the portal capillaries.

In the waxy or amyloid liver it is the intermediate zone of the lobules which is affected, the infiltration commencing from the branches of the hepatic artery. A microscopic examination therefore of a section of amyloid liver will show the amyloid substance in the intermediate zone. To the naked eye the cut surface appears dry, bloodless, and waxy looking, of a pale reddish or dirty yellow colour. If the disease be very far advanced, the distinction between the lobules may be quite lost.

2. *Q.*—Describe the structure of epithelioma as seen by the naked eye and under the microscope. Mention the parts of the body which it chiefly affects, and the course which it follows. (Univ. Edin., 1874.)

A.—Epithelioma occurs either in the form of a hard nodule or of a small excoriation or ulcer. The surface of the ulcer is frequently villous and papillated. The tumour is generally of a firm consistence, but may be soft and friable. When cut into it presents a greyish-white surface, which may be intersected with lines of fibrous tissue. On pressure a small quantity of a milky granular fluid is exuded, and in many cases also a peculiar curdy material may be expressed which exudes in a worm-like form, like the sebaceous matter from the glands of the skin, and is very characteristic. This substance, which consists of epithelial scales, does not diffuse itself when mixed with water. Microscopically, epithelioma presents numerous cells resembling those of squamous epithelium. These cells have a great tendency to become aggregated together in a globular form, sometimes becoming so large as to be plainly visible to the naked eye. The stroma may present every variation between a rapidly growing embryonic and a completely fibrillated tissue, but usually consists of a small-celled infiltration surrounding the epithelial elements, which may ultimately become developed into a more or less completely fibrillated tissue.

The parts of the body most often affected are the lower lip, the tongue, the prepuce, the scrotum, the labia, the eyelids, the cheeks, the uterus, and the bladder.

Epithelioma usually commences as a small induration, which assumes a pustular form, and subsequently involves the deeper parts, the growth becoming mulberry-shaped, villous, cauliflower-like or nodulated in form. The surface early becomes ulcerated, and the resulting open sore has an irregular grey and often bloody base. The tumour tends to infect secondarily the neighbouring lymphatic glands, and as it extends may affect any tissue, muscle, bone or tendon, all becoming implicated.

3. *Q.*—Define what is meant by lardaceous degeneration, and describe the changes produced by this morbid process in the liver. (A. H. L., 1876.)

A.—Lardaceous, [waxy, or, amyloid, degeneration consists in the infiltration of the tissues, with a peculiar homogeneous translucent substance closely resembling albumen.

Amyloid degeneration appears to be associated with certain cachectic conditions, brought on by many exhausting diseases, especially those which are attended by profuse and long-continued suppuration. It may occur in any organ or tissue, but is most prone to attack the kidneys, liver, spleen, lymphatic glands, and intestine.

In the liver the amyloid change first occurs in the minute branches of the hepatic artery, gradually extending to the adjacent hepatic cells, and thence infiltrating the whole organ. In the early stages of the affection the infiltration will be found confined to the intermediate portions of the lobule corresponding to the distribution of the hepatic artery. The amyloid liver is increased in size, but the enlargement is uniform. Weight and specific gravity are both increased. The edge is rounded, surface smooth, and the capsule stretched and tense. (See Question 1 on Pathology, p. 49.) Amyloid infiltration does not cause ascites, but it impairs the vitality of the hepatic cells, and thus interferes with the functions of the organ.

4. *Q.*—State the difference between a thrombus and an embolus, and describe the causes of thrombosis.

(Univ. St. Andrew's, 1874.)

A.—A *thrombus* is a coagulum formed in a blood vessel in consequence of some impediment to the free circulation, or of some change in the walls of the vessel.

Embolism signifies the entire or partial plugging of a vessel by a solid fragment or *embolus* conveyed from a distant part.

The difference, therefore, between a thrombus, and an embolus is this—that the former is a coagulum formed where it is found, whereas the latter is a substance, perhaps a detached portion of a thrombus, carried by the blood until it becomes arrested in some vessel too small to allow of its passage.

The causes of thrombosis may be divided into three classes:—1. Impediment or retardation of the blood current. 2. Abnormal conditions of the inner surface of the heart, or the walls of the vessels. 3. Certain conditions of the blood.

(1.) Impediment or retardation of the blood current may be due to valvular or other organic disease of the heart, pressure on its cavities or mere feeble cardiac action: lung affections which impede the pulmonary circulation; constriction of a vessel from pressure, or obstruction from internal plugging, as of an embolus; solution of continuity of a vessel; dilatations of vessels as aneurism, varicose veins and distended venous plexuses. (2.) The abnormal conditions of the inner surface of the heart or the coats of the vessels include acute inflammation, fissuring of surface, atheroma or calcification; projection of cancerous or other new formations into the interior of the vessels; changes in the walls associated with surrounding gangrene or inflammation. (3.) The conditions of the blood tending to thrombosis are hyperinosis or increased tendency in the fibrine to coagulate, a condition observed in pregnancy and various acute inflammatory affections;

pyæmia and allied states, and anæmia. Increased heat of the blood is also considered as a cause of thrombosis.

5. *Q.*—How do cysts originate? Give a brief account of the different kind of cysts, illustrated by examples. (Univ. Edin., 1875).

A.—A cyst consists of a cavity, containing liquid or a pultaceous material, separated from the surrounding structures by a more or less distinct capsule.

There are two principal modes by which cysts originate. The most common method is by the gradual accumulation of substances within the cavities of pre-existing structures; the other mode is by the independent formation of a cyst in the tissues.

The first variety, viz., that caused by the accumulation of secretions or other products within pre-existing cavities may be caused by:—1. Retention of the normal secretion from closure of the excretory ducts—an example of this kind of cyst is found in the case of sebaceous glands. 2. Excessive secretion, the cavity not possessing an excretory duct. Example: the formation of bursa. 3. The extravasation of blood into a cavity; as hæmatocele.

A cyst may be independently formed by:—1. Softening and liquefaction of the tissues in some particular part from fatty or mucoid changes. The surrounding tissues become condensed, and a cyst-wall is formed: examples of this kind of cyst are very common in some of the new formations, as enchondroma, sarcoma, lipoma, &c. 2. Enlargement and fusion of the spaces of the connective tissue and accumulation of fluids in them. A cyst-wall is formed by condensation of surrounding tissues: under this heading are included bursæ, serous cysts in the neck, and some ovarian cysts. 3. Formation of a cyst-wall around foreign bodies, parasites, or extravasated blood.

6. *Q.*—Explain lymphoma, leukæmia, and lymphadenoma. (Univ. Oxford, 1875).

A.—*Lymphoma* is the name given to a growth which consists of lymphatic or admoid tissue. This tissue exists in the follicles of the lymphatic glands, the malpighian corpuscles of the spleen. Peyer's glands, the solitary glands of the intestine, the follicles of the pharynx and tonsils, the thymus, &c. It consists of a fine reticulum, containing in its meshes lymphatic cells.

Lymphomata are for the most part simply overgrowths of pre-existing lymphatic structures. Under the term lymphomata are included simple lymphoma, leukæmia, and lymphadenoma.

Leukæmia signifies a disease, characterised by a continuous and permanent increase in the number of the white corpuscles of the blood. With this increase, there co-exists a new formation of lymphatic tissue in the spleen, lymphatic glands, and other organs. The new formation of lymphatic tissue is at first hyperplastic, and takes place in the spleen, and lymphatic glands; subsequently it becomes heteroplastic, and infiltrates the liver, kidneys, lungs, &c.

Lymphadenoma consists in a hyperplasia of lymphatic glands and other lymphatic structures, with the development of lymphatic growths in other organs. In structure, these new growths resemble lymphatic tissue: in the earlier stages, large cellular elements containing one or more nuclei, are often found. These growths are very malignant in their character, infiltrating surrounding structures, and being reproduced in internal organs.

7. *Q.*—Describe the anatomical seat, and pathological nature, of the lesion in enteric fever.

(Univ. S. Andrews, 1875).

A.—The most characteristic pathological change in typhoid fever takes place in the solitary glands and

Peyer's glands. The first change is an increased vascularity in the glands and general proliferation of their lymphatic elements. The patches and glands are enlarged from the presence of a morbid substance consisting of granular matter and oil globules. The second stage is one of softening and breaking down, which is followed by the third stage, that of ulceration. Typhoid ulcers are oval or elliptical, round, or irregular. They vary in size from a line to one and a half-inch, but several may join and involve a large surface. There is no thickening or hardening of the edges, or floor, or any morbid deposit. The margin consists of "a well defined fringe of mucous membrane detached from the submucous tissue, a line or more in width, of a purple or slate colour; which is best seen when the bowel is floated in water" (Murchison). The fourth stage is that of cicatrization: this takes place by the resolution of the peripheral hetero-plastic growth, the approximation and union of the undermined edges with the floor of the ulcer, and the gradual formation from the margin of an epithelial covering. The gland structure is not reproduced. The resulting cicatrix is slightly depressed, but there is no puckering or diminution in the calibre of the gut.

8. *Q.*—Describe the appearances presented by the lung after death in the different stages of acute lobar pneumonia, including the histological changes as seen under the microscope. (Univ. Edin., 1876).

A.—In the first stage of lobar pneumonia, that of engorgement, the lung is found very vascular, of a dark red colour, not uniform but mottled, increased in specific gravity and absolute weight, firm, more resisting and less elastic than in health, less crepitant than natural, and pitting on pressure; on section a reddish, frothy, tenacious, liquid exudes. The lung tissue is still perceptible.

In the second stage, that of red hepatization the colour is more uniform and dull-reddish. The tissue is solid, firm, inelastic, and non-crepitant, and very friable, breaking down readily, with a soft granular fracture. The cut surface is dark reddish brown in colour, presenting a granular appearance, due to the presence of fibrinous plugs in the air vesicles. But little alteration is observed in the alveolar walls or in the alveolar endothelium. The former may contain a few leucocytes, and the latter may be somewhat swollen and granular. In the third stage, that of grey hepatization the colour of the organ is grey or yellowish white. The tissue is soft and pulpy, exuding a puriform liquid from the cut surface. The pulmonary alveoli are seen to be completely filled with young cell forms and granular elements, which have often undergone so much fatty change as to have lost their distinctive outline.

9. *Q.*—Give some account of fatty degeneration.
(Oxford Univ., 1875).

A.—Fatty degeneration consists in the transformation of the albuminoid constituents of the tissues into fat, the cells being the parts most frequently affected. The fat appears, first in the protoplasm, and subsequently in the nucleus, as minute granules, and molecules. These granules gradually increase in number, and some of them may coalesce and form distinct drops of fat. The nucleus becomes ultimately involved, the cell-wall is destroyed, and the cell becomes thus transformed into a mass of granular fat.

These granules constitute the "inflammatory" or "oxudation corpuscles," or corpuscles of Gluge. Ultimately these corpuscles break up, the albuminous matter liquifies, and the fat is distributed in the tissues.

The effect of fatty degeneration is to cause more or less softening of the part. The cellular elements being destroyed, and the intercellular substance also undergoing fatty changes, all trace of the original structure may be ultimately lost. This destruction of the cells distinguishes fatty degeneration from fatty infiltration.

If large portions of tissue are affected, the change is visible to the naked eye, there being diminution in consistence, and elasticity, with an opaque yellowish-white colour. The arteries, the brain, the heart, and the muscles generally are all liable to fatty degeneration, as are the liver and kidneys. Fatty degeneration in the liver does not however constitute the disease known as "fatty liver," that being fatty infiltration.

10. *Q.*—State the naked-eye characters, and give the minute structure of cartilaginous tumours. In what situations are they found? To what changes are they subject? What prognosis would you form in regard to them. (Univ. Edin., 1875).

A.—Cartilaginous tumours, or enchondromata are tumours, the histological structure of which resembles cartilage. It consists of rounded cartilaginous masses embedded in fibrous membrane. Its consistence varies much, from the softness of the vitreous humour to the hardness of ordinary cartilage. Externally, cartilaginous tumours are smooth, somewhat nodulated, firm, and hard or soft.

Microscopically, they consist of:—(1). A basis or intercellular substance which may be hyaline, more or less fibrous or mucoid. (2). Cells varying in appearance and arrangement in different cases. They may be very numerous, or few in proportion to the matrix. The cells may be round, oval, spindle-shaped, or stellate, single, or, arranged in groups, and usually surrounded by a fibrous capsule. (3). Nuclei also varying in shape —one kind of irregular shaped nucleus with branches or processes, is met with in cartilaginous tumours, and appears peculiar to them.

The commonest situation for cartilaginous tumours is in connection with the bones of the hand, the articular extremities of long bones, ribs, sternum, bones of pelvis. Rarely do they affect the bones of the head and face, and very rarely they occur in the testicle, breast, and subcutaneous tissue.

The secondary changes to which enchondromata are most subject are calcification, ossification, fatty degeneration, and mucoid softening.

With regard to prognosis, it must be remembered that although for the most part enchondromata, may be regarded as innocent growths, the softer forms, especially those occuring in the medulla of bone, sometimes exhibit malignant characters. They may recur locally after removal, and have infected the lymphatics, and recurred in the lungs.

Enchondromata are frequently associated with sarcoma ; it is therefore probable that in many cases the malignant properties ascribed to enchondromata were due to the admixture of sarcomatus elements.

FORENSIC MEDICINE.

1. *Q.*—What are the symptoms and treatment of poisoning by oxalic acid. (A. H. L., 1875).

A.—If the dose of oxalic acid be very large, symptoms of poisoning will follow immediately. An intensely acid taste is experienced in the mouth which is followed by burning pain in the throat and stomach, increased by pressure. Vomiting of blood or of greenish-brown grumous matters follows, and if the patient survive some hours there is purging of a similar matter.

Collapse soon sets in: the pulse becomes very feeble and the skin cold and clammy; the respiration is hurried and the countenance pale and anxious. The patient also complains of soreness of the mouth, inflammation and swelling of the tongue, and constriction of the throat, and there is thirst, restlessness, difficulty of swallowing, and cough.

Treatment.—Chalk suspended in water is the antidote. Magnesia or its carbonate may be employed, or plaster from the ceiling of the room. Warm water should be freely given after the antidotes, and if sickness is not present emetics of sulphate of zinc may be employed. The stomach pump should not be used, or if it be, should be introduced with great caution.

2. *Q.*—Death from starvation: describe the post-mortem appearance to be expected in (*a*) the body generally, (*b*) the intestinal canal. (Univ. Edin., 1874).

A.—In death from starvation the body will be found to be much emaciated, and will exhale a peculiar fœtid odour. The skin is dry and shrivelled, the muscles soft, reduced in size, and free from fat. The eyes are red and open, fauces dry, heart, lungs, and large vessels collapsed and destitute of blood. The liver is small, and all the internal organs in fact collapsed and bloodless. The stomach, in some cases, will be found quite healthy; in others it will be collapsed and empty, and the mucous membrane more or less ulcerated. The intestines are then contracted, empty, and so shrunken that the canal is almost obliterated.

3. *Q.*—Describe the symptoms of acute arsenical poisoning and give the treatment. (A. H. L., 1876).

A.—In acute arsenical poisoning the symptoms begin to manifest themselves in from half-an-hour to an hour after the dose has been taken, but this will depend somewhat on the form and quantity of the dose. The patient first complains of faintness and depression, then of intense burning pain in the stomach. Nausea and vomiting occur, the vomited matters being dark, brown, black, bilious, or greenish from the admixture of indigo, which substance (or soot), the law requires to be mixed with arsenic, when the latter is sold in small quantities. There may be purging with straining at stool, and cramps in the legs. There is intense thirst, feeble and irregular pulse, and cold and clammy skin. In some cases there may be little or no pain, and vomiting and purging may be absent. The symptoms frequently resemble those of an attack of cholera, while in some cases signs of collapse first appear.

The treatment must consist in the promotion of vomiting and administration of diluent drinks. The stomach-pump must be used. Vomiting may be promoted by draughts of warm milk and water, and tickling the fauces with a feather, or emetics of ipecacuanha, mustard, and salt may be given. When the stomach has been emptied, milk, or milk and eggs, or a mixture of milk, lime-water, and white of eggs may be given. Symptoms must be treated as they arise. Collapse will require stimulants, nervous symptoms, anodynes. Small quantities of acidulated water may be given to allay thirst. The best antidotes are the hydrated sesquioxide of iron, the hydrated oxide of magnesia, calcined magnesia, and animal charcoal.

4. *Q.*—State the method you would pursue to ascertain the presence of strychnia in an organic mixture.
(Qu.' Univ., Ireland, 1875).

A.—Digest the organic matters with about one tenth of their bulk of hydrochloric acid over a water-bath till they are fluid. Filter the liquid, and wash the substance remaining on the filter with distilled water, as long as it has an acid reaction, adding the washing to the filtrate. Concentrate the liquid by evaporation, and add carbonate of soda in excess. Shake the liquid for several minutes in a bottle with half an ounce of chloroform or benzole. The chloroform having been allowed to subside, or the benzole to collect on the surface, it is drawn off by a pipette, transferred to an evaporating basin, and expelled over a water-bath. If the residue in the basin is free from colour, test at once for strychnia, if not, moisten with concentrated sulphuric acid, and expose for some hours to a water-bath to discharge all organic matters except the strychnia. Treat the charred mass with water, and filter to separate the carbon. Add ammonia in excess, and shake the solution with a drachm of chloroform. Repeat the process until no charring takes place, when sulphuric acid is added to the residue of this chloroform solution evaporated. Tests for strychnia may now be applied to the chloroform solution. A portion of the solution is deposited on a glass slide. Under the microscope, the alkaloid will be seen to be deposited as rosettes, veined leaves, dotted needles, circles with broken radii, and branched or reticulated forms. As chemical tests, carbazotic acid added to the solution, first gives an abundant gelatinous deposit, which gradually gives way to covered crystals waving in the liquid like tufts of grass. A solution of corrosive sublimate causes an abundant white precipitate.

5. *Q.*—How would you determine whether a child had been born alive or dead. (A. H. L., 1875).

A.—In order that a child should, according to the legal phraseology, have been "born alive," it must have been delivered entirely, and then must have had entire independent circulation in it. This independent circulation, however, does not necessarily imply severance of the umbilical cord, nor is it absolutely necessary that respiration shall have occurred.

In the absence of signs of respiration positive proof of live birth will be extremely difficult, but negative proof may be found in the presence of signs of intra-uterine maceration. These consist in a shrunken and flaccid condition of the body, with a naked appearance of the skin of the hands and feet. The skin is whitish, reddish, brown, or coppery red : the cuticle is raised in blisters, and easily detached. The denuded patches are moist and greasy, and exude a stinking fluid. The face is flattened, and the features distorted.

The fact of respiration having taken place is recognised by means of various tests. In children who have breathed, the highest point of the concavity of the diaphragm, is between the fifth and sixth ribs, whereas in children born dead it is between the fourth and fifth.

The lungs are increased in size by respiration, and other changes take place in them. For instance, the air cells are developed, and may be recognised as bright red spots on the surface of the lung, and the air cannot be forced out of them by pressure. Respiration also changes the consistence of the lungs, which from being firm, compact, and resistant like liver, become spongy, crepitant, and yielding. Lungs which have respired float in water. In order to test this buoyancy, what is known as the "hydrostatic test" must be employed. For this purpose the lung is cut up into pieces, and put in water. These pieces are then subjected to pressure, and again placed in water. If after repeated pressure the lungs still float, there will be a strong presumption that respiration has taken place. One objection to this test is that inflation produces the same effect, but as thorough inflation is exceedingly difficult to effect, this difficulty will not often arise.

Other evidences of live birth may be found in the presence of food or milk in the stomach: in the absence of meconium from the large intestines, and in the emptiness of the bladder.

6. *Q.*—A dark stain is found on the flooring of a room. How would you proceed to ascertain whether it was blood? (Qu. Univ. Ireland, 1875).

A.—The stained portion of the wood should be cut out, moistened with distilled water, and scraped, or a splinter of the stained wood should be suspended in distilled water. The colouring matter will gradually appear in streaks descending to the bottom of the tube. Half this solution may be treated with dilute ammonia. If the colour be due to blood only, a slight heightening of colour will take place, but if the stain is of vegetable origin, the ammonia will turn it green. If the other half of the solution be boiled, the colour will disappear, forming a dirty brown precipitate. The microscope may also be used to distinguish the blood corpuscles. Caustic potash dissolves the coagulum formed by boiling a solution of blood in water, and the resulting solution is green by transmitted, and red by reflected light.

Nitric acid added to a portion of the solution, gives a whitish-grey precipitate, if blood be present. Tincture of guaiacum added to a watery solution containing blood, produces a reddish-white precipitate; this, when treated with an ethereal solution of peroxide of hydrogen, developes a beautiful blue.

Hœmin crystals may be obtained from a solution containing blood, by adding glacial acetic acid, and evaporating the mixture. If the dried residue be examined under the microscope rhomboidal, tubular, or other crystals of a yellowish, yellowish-red, or dirty blood-red colour will be noticed.

7. *Q.*—What are the tests for corrosive sublimate, copper and zinc. (A. H. L., 1874).

A.—The following reactions take place with corrosive sublimate: iodide of potassium gives a bright scarlet colour; solution of potash a bright yellow; hydrosulphuret of ammonia gives first a yellowish and then a black colour; when heated in a reduction tube, corrosive sublimate melts, boils, and volatilises, forming a white crystalline sublimate. Corrosive sublimate is freely soluble in ether, and the ethereal solution, after spontaneous evaporation, deposits white prismatic crystals. When heated with carbonate of soda in a reduction tube, globules of metallic mercury are produced.

Copper salts in solution give a deep brown or black precipitate with sulphuretted hydrogen. With ferrocyanide of potassium, a fine brown gelatinous precipitate is produced; polished iron (a needle for instance), placed in the solution, becomes coated with a film of copper; a drop of solution placed on platinum foil slightly acidulated, and touched with zinc, yields a similar deposit: a minute fragment of zinc placed in a drop of copper solution, causes an arborescent deposit of copper.

Zinc. Sulphate of zinc is precipitated as a white sulphide by sulphuretted hydrogen, and sulphide of ammonium. Liquor ammoniæ, and the sesquicarbonate throw down a white precipitate soluble in excess. Ferro-cyanide of potassium causes a white precipitate.

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